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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,962	08/31/2000	YING CHIH CHANG	03848-00050	4091
7590	02/25/2004			
John P. Iwanicki Banner & Witcoff, Ltd. 28 State Street, 28th Floor Boston, MA 02109			EXAMINER BAKER, MAURIE GARCIA	
			ART UNIT 1639	PAPER NUMBER

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/652,962

Applicant(s)

CHANG ET AL.

Examiner

Maurie G. Baker

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4,7 and 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,7 and 8 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.
2. The Response filed November 26, 2003 is acknowledged. Claim 1 was amended and claims 5, 6 and 9-21 were cancelled in this Response. Therefore, claims 1-4, 7 and 8 are pending and are examined on the merits in this action.

### ***Status of Rejections***

3. The previous rejection under 35 U.S.C. 102 is withdrawn; however, this rejection has been rewritten as a 35 U.S.C. 102/103 rejection. The examiner's response to applicant's arguments is set forth following the rejection, as pertinent. A new rejection, necessitated by applicant's amendment is also set forth in this action.

### **NEW REJECTIONS**

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-4, 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant's claims are drawn to a "method of preparing a polymeric brush substrate for use in solid phase synthesis of macromolecules". Thus the claim is a method of preparing a polymeric brush substrate, **not** for carrying out synthesis of macromolecules. However, applicant has newly amended the claim to recite a step (c) of "covalently attaching a plurality of macromolecules to the polymeric brush". Thus, it appears that the claimed method of preparing a polymeric brush substrate now contains steps regarding synthesis of macromolecules. This is highly confusing and it is completely unclear as to applicant's intent. Note the following from MPEP 2173.02: If the scope of the invention sought to be patented cannot be determined from the language of the claims with a reasonable degree of certainty, a rejection of the claims under 35 U.S.C. 112, second paragraph is appropriate. *In re Wiggins*, 488 F.2d 538, 179 USPQ 421 (CCPA 1973).

### ***Claim Rejections - 35 USC § 102/103***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by or in the alternative under 35 U.S.C. 103(a) as being unpatentable over Huang et al (Anal. Chem. 1997; on PTO-1449).

It is noted that instant claim 1 recites "for use in solid-phase synthesis of macromolecules". This is deemed to be an intended use recitation and has not been given any patentable weight. Note that the "preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not

depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone.” *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976). In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Additionally, claim 1 recites “a substrate *for solid-phase synthesis of macromolecules*” (emphasis added) in step (a). This is also an intended use recitation and also has not been accorded any patentable weight. As stated above, the recitation must result in a manipulative difference as compared to the prior art. The recitation “for solid-phase synthesis of macromolecules” does not provide any manipulative difference to the substrate and especially does not provide any manipulative difference to the claimed method of making.

Furthermore, the newly added step (c) of “covalently attaching a plurality of macromolecules to the polymeric brush” also appears to be directed to the intended use, although the recitation of such as a step in the body of the claimed method of preparing a polymeric brush substrate is deemed to be highly confusing (see rejection under the second paragraph of 35 U.S.C. 112 above).

The reference described below reads on all of the claimed limitations except for the intended use and thus is deemed to anticipate the instant claims.

Huang et al disclose a method of surface-initiated radical polymerization on silica that reads on the claimed method (see Abstract and Scheme 2).

Specifically, the reference discloses “preparing polymeric thin films” where “living radicals are used to greatly improve the control of the reaction” (page 4577, 2<sup>nd</sup> column, bottom). The thin film of the reference reads on the claimed “polymeric brush”. As shown in Scheme 2, benzyl chloride free radical initiators are covalently attached to a silica surface (also see description of reaction in Scheme 1). This reads directly on the claimed “radical generation site distal to the substrate” and also on the limitations of instant claim 3. Vinyl-containing monomers are reacted with the benzyl chloride free radical initiators on the surface via a living radical polymerization (see page 4578, 1<sup>st</sup> column and Schemes 1 & 2); this reads directly on the limitations of instant claims 2 and 4. Also as shown in Scheme 2, the polymer thin film product formed by the method of Huang et al contains amino groups, reading on the instant claim 7.

In the alternative, it is noted that the added step (c) of “covalently attaching a plurality of macromolecules to the polymeric brush” could be interpreted as a further step in the method (i.e. not interpreted as being directed to the intended use). Then, the claims would be obvious in view of the teachings of the Huang et al reference. The reference clearly describes the possibility of attaching macromolecules to their polymeric brush to create differing films for new stationary phases (see page 4580).

***Response to Arguments***

10. Applicant's arguments filed November 26, 2003 have been fully considered but are not found persuasive. The rejection has been restated as a 102/103 rejection and thus the arguments are moot in view of this new rejection. However, in the interest of compact prosecution, the examiner would like to note the following.

11. The recitation added to amended claim 1 appears to be directed to an intended use and is not accorded any patentable weight. The recitation does not provide any manipulative difference to the substrate and especially does not provide any manipulative difference to the claimed method of preparing a polymeric brush substrate.

12. Moreover, it is noted that Huang et al discloses benzyl chloride free radical initiators that are covalently attached to a silica surface. Thus the silica of the reference reads on the claimed substrate. This substrate is clearly capable of performing the intended use of "solid-phase synthesis of macromolecules". Note that if a prior art structure is capable of performing the intended use, then it meets the claim.

13. Also please note MPEP 2173.06 concerning prior art rejections of claims rejected as indefinite.

***Status of Claims/Conclusion***


14. No claims are allowed.



15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maurie Garcia Baker, Ph.D. whose telephone number is (571) 272-0805. The examiner is on an increased flextime schedule; the best time to contact the examiner is Monday-Friday from 6:00-10:00 a.m.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang, can be reached at (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

Maurie Garcia Baker, Ph.D.  
February 21, 2004



**MAURIE GARCIA BAKER PH.D.**  
**PRIMARY EXAMINER**